

### **Amendments to the Claims**

This listing of claims will replace all prior versions, and listings of claims in the application:

#### **Listing of Claims:**

Claims 1-28 (Canceled)

Claim 29 (Currently Amended): A cartridge for characterizing particles suspended in a liquid sample, comprising:

a housing with connectors for operational connection to and disconnection from corresponding connectors of a docking station for establishment of electrical and fluid connections when the cartridge is received in the docking station,

~~a first mixing chamber and a first collection chamber separated by a wall containing a first orifice for the passage of the particles between the first mixing chamber and the first collection chamber, first particle characterization means for characterizing particles passing through the first orifice,~~

a bore in ~~[[the]]~~ an outer surface of the housing for entrance of the liquid sample, communicating with

a first sampling member positioned in the housing for sampling the liquid sample and having a first cavity for receiving and holding the liquid sample, the first sampling

member being movably positioned in relation to the housing in such a way that[[,]] in a first position, the first cavity is in communication with the bore for entrance of the liquid sample into the first cavity, and[[,]] in a second position[[,]] the first cavity is in communication with the first mixing chamber for discharge of the liquid sample into the first mixing chamber whereby the sampling member operates to receive and hold a precise volume of the liquid sample and to transfer the liquid sample to the first mixing chamber,

a first collection chamber separated by a first wall from the first mixing chamber, the first wall having a first orifice for the passage of particles between the first mixing chamber and the first collection chamber, and

a first particle characterizer that characterizes the particles passing through the first orifice.

Claim 30 (Currently Amended): A cartridge according to claim 29, further comprising:

a second mixing chamber and a second collection chamber separated by a second wall containing a second orifice for the passage of the particles between the second mixing chamber and the second collection chamber, and

a second particle characterizer that characterizes the ~~characterization means for~~ characterizing particles passing through the second orifice, [[and]]

wherein when the first sampling member is in the second position, the first cavity is in communication with the first mixing chamber for entrance of the liquid sample from the first mixing chamber into the first cavity, and~~[[,]]~~ when the first sampling member is in a third position, the first cavity is in communication with the second mixing chamber for discharge of the liquid sample in the first cavity into the second mixing chamber.

Claim 31 (Currently Amended): A cartridge according to claim 29, further comprising:

a second mixing chamber and a second collection chamber separated by a second wall containing a second orifice for the passage of the particles between the second mixing chamber and the second collection chamber,

a second particle characterizer that characterizes the ~~characterization means for~~ characterizing particles passing through the second orifice, and

a second sampling member positioned in the housing for sampling a small and precise volume of the liquid sample from the first mixing chamber and having a second cavity for receiving and holding the sampld liquid sample, the second sampling member being movably positioned in relation to the housing in such a way that~~[[,]]~~ in a first position, the second cavity is in communication with the first mixing chamber for entrance of the liquid sample from the first mixing chamber into the first cavity, and~~[[,]]~~ in a second position~~[[,]]~~ the second cavity is in communication with the second mixing chamber for discharge of the sampld liquid sample in the second cavity into the

second mixing chamber.

Claim 32 (Previously Presented): A cartridge according to claim 29, further comprising a reagent chamber positioned adjacent to the first mixing chamber for holding a reagent to be entered into the first mixing chamber.

Claim 33 (Previously Presented): A cartridge according to claim 32, further comprising a breakable seal separating the reagent chamber from the first mixing chamber.

Claim 34 (Currently Amended): A cartridge according to claim 29, wherein ~~at least one~~ of the first and ~~second~~ particle characterizer ~~characterization means~~ includes a first electrode in the ~~respective one of the first and second~~ mixing chamber and a second electrode in the ~~respective one of the first and second~~ collection chamber, each electrode the first and second electrodes being electrically connected to [[a]] respective terminal members ~~member~~ accessible at the outer surface of the housing cartridge.

Claim 35 (Currently Amended): A cartridge according to claim 29, wherein the housing further comprises a ~~[[first]]~~ liquid storage chamber for holding a liquid ~~and that, in the second position of the first sampling member, the liquid storage chamber~~ communicates with the first cavity when the first sampling member is in the second position so that liquid can be discharged from the ~~[[first]]~~ liquid storage chamber through the first cavity of the first sampling member and into the first mixing chamber together with the liquid sample.

Claim 36 (Currently Amended): A cartridge according to claim 30 ~~[[29]]~~, wherein the housing further comprises a ~~second~~ liquid storage chamber for holding a liquid to be discharged from the ~~second~~ liquid storage chamber through ~~the respective one of the first and second cavity~~ and into the second mixing chamber together with the sampled liquid sample.

Claim 37 (Currently Amended): A cartridge according to claim 29, comprising a volume meter that determines a metering means for determining the beginning and an end of a period during which a predetermined volume of liquid has passed through ~~at least one of the first and second orifice~~.

Claim 38 (Currently Amended): A cartridge according to claim 37, wherein the volume ~~meter~~ metering means comprises a volume metering chamber with an input communicating with the respective first collection chamber, and an output, and wherein presence of liquid is detected by the volume meter at the input and at the output, respectively. .

Claim 39 (Currently Amended): A cartridge according to claim 38, wherein presence of liquid is detected with a ~~secondary~~ an electrode positioned at the input and a further ~~secondary~~ electrode positioned at the output.

Claim 40 (Previously Presented): A cartridge according to claim 38, wherein presence of liquid is detected optically.

Claim 41 (Currently Amended): A cartridge according to claim 29, wherein each of the first mixing chamber ~~chambers~~ and the first collection chamber ~~have chambers~~ has a transverse cross-sectional areas ~~[[area]]~~ at ~~[[the]]~~ a level of the respective first orifice, the transverse cross-sectional areas are ~~which is~~ substantially less than ~~[[the]]~~ transverse cross-sectional areas ~~[[area]]~~ of the first mixing chamber and the first collection ~~respective chamber~~ over a substantial part of the height of the chamber above the respective first orifice.

Claim 42 (Currently Amended): A cartridge according to claim 29, wherein ~~[[the]]~~ a surface defining the first cavity of the first sampling member has an anti-coagulation reagent.

Claim 43 (Currently Amended): A cartridge according to claim 35 ~~[[29]]~~, wherein the ~~[[first]]~~ liquid storage chamber holds chemical reagents for modification of the liquid ~~[[blood]]~~ sample.

Claim 44 (Currently Amended): A cartridge according to claim 29, wherein a mixing member is positioned in ~~at least one of the~~ first mixing chamber ~~chambers~~.

Claim 45 (Previously Presented): A cartridge according to claim 44, wherein the mixing member is magnetic.

Claim 46 (Currently Amended): A cartridge according to claim 29, further comprising a sensor for characterization of the liquid sample.

Claim 47 (Currently Amended): A cartridge according to claim 46, wherein the sensor for characterization of the liquid sample is adapted for spectrophotometric characterization of the liquid sample.

Claim 48 (Currently Amended): A cartridge according to claim 29, wherein the housing further comprises a pump chamber communicating with ~~one of the first and second~~ collection chamber ~~chambers~~ and having a pump actuator for causing ~~[[a]]~~ liquid flow through the ~~respective~~ first orifice.

Claim 49 (Previously Presented): A cartridge according to claim 48, wherein the pump actuator is a piston.



Claim 50 (Previously Presented): A cartridge according to claim 48, wherein the pump actuator is a membrane.

Claim 51 (Currently Amended): A method of operating a particle characterization apparatus comprising a cartridge according to claim 36 ~~[[29]]~~, the cartridge being demountable from the apparatus, the method comprising:

sampling liquid containing particles with the cartridge through the bore with the first sampling member in ~~[[its]]~~ the first position,

positioning the cartridge in the apparatus,

moving the first sampling member to ~~[[its]]~~ the second position,

pumping liquid ~~[[in]]~~ from the first storage chamber through the ~~second~~ first cavity and into the first mixing chamber together with the liquid sample,

making particle characterizing measurements,

disconnecting the cartridge from the apparatus, and

discarding the cartridge.

Claim 52 (Currently Amended): A method of operating a particle characterization apparatus comprising a cartridge according to claim 31, the cartridge being

demountable from the apparatus and further comprising a first liquid storage chamber and a second liquid storage chamber for both holding liquid, the method comprising:

sampling liquid containing particles with the cartridge through the bore with the first sampling member in ~~[[its]]~~ the first position,

positioning the cartridge in the apparatus,

moving the first sampling member to ~~[[its]]~~ the second position,

pumping liquid from ~~[[in]]~~ the first liquid storage chamber through the first cavity and into the first mixing chamber together with the liquid sample,

sampling a liquid sample from the first mixing chamber with the second sampling member in ~~[[its]]~~ the first position,

moving the second sampling member to ~~[[its]]~~ the second position,

pumping liquid ~~[[in]]~~ from the second liquid storage chamber through the second cavity and into the second mixing chamber together with the liquid sample,

making particle characterizing measurements with the first and second particle characterizers,

disconnecting the cartridge from the apparatus, and

discarding the cartridge.

Claim 53 (Currently Amended): An apparatus for characterizing particles suspended in a liquid, comprising:

a cartridge according to claim 29, and

a docking station for removably receiving the cartridge, comprising connectors for operational connection with the first particle characterization means characterizer when the cartridge is received in the docking station.

Claim 54 (Currently Amended): An apparatus according to claim 53, wherein the cartridge further comprises a first port communicating with the first collection chamber for causing [[a]] liquid flow through the first orifice, and

the docking station further comprises a port for forming a gas connection ~~with the~~ with the cartridge first port when the cartridge is received in the docking station for application of a pressure causing a liquid flow through the orifice.

Claim 55 (Canceled)

Claim 56 (Currently Amended): An apparatus according to claim 61 ~~[[55]]~~, wherein the cartridge further comprises a first port communicating with the first collection chamber for causing liquid flow through the first orifice, and a second port communicating with the second collection chamber for causing ~~[[a]]~~ liquid flow through the second orifice, and

the docking station further comprises a first port and a second port for forming a gas connection ~~with the~~ with the first port and the second cartridge port of the cartridge when the cartridge is received in the docking station for application of a pressure causing ~~[[a]]~~ liquid flow through the first orifice and the second orifice.

Claim 57 (New): A cartridge according to claim 31, wherein the second particle characterizer includes a first electrode in the second mixing chamber and a second electrode in the second collection chamber, the first and second electrodes being electrically connected to respective terminal members accessible at the outer surface of the housing.

Claim 58 (New): A cartridge according to claim 31, wherein the housing further comprises a liquid storage chamber for holding a liquid to be discharged from the liquid storage chamber through the second cavity and into the second mixing chamber together with the liquid sample.

Claim 59 (New): A cartridge according to claim 30, comprising a volume meter that determines a beginning and an end of a period during which a predetermined volume of liquid has passed through the second orifice.

Claim 60 (New): A cartridge according to claim 31, comprising a volume meter that determines a beginning and an end of a period during which a predetermined volume of liquid has passed through the second orifice.

Claim 61 (New): An apparatus for characterizing particles suspended in a liquid, comprising:

a cartridge according to claim 30, and

a docking station for removably receiving the cartridge, comprising connectors for operational connection with the first particle characterizer and the second particle characterizer when the cartridge is received in the docking station.

Claim 62 (New): An apparatus for characterizing particles suspended in a liquid, comprising:

a cartridge according to claim 31, and

a docking station for removably receiving the cartridge, comprising connectors for operational connection with the first particle characterizer and the second particle characterizer when the cartridge is received in the docking station